

The dissertation of Sir W. Jones, on the musical notes of the Hindoos, may be consulted (A. R. vol. iii. p. 45). *Murchana* is here rendered according to the passage quoted by the Scholiast from a musical treatise. "The ascent and descent of the seven notes in due order are called *Murchha*." There are seven in each octave, and consequently twenty-one in the three octaves.

V. 11. The knowledge of God is attained by completely subduing worldly appetites. The discus is KRISHNA'S weapon of offence.

V. 13. DHATRI is a title of BRAHMA. DEVAKI was mother of KRISHNA. In the infernal regions vast serpents, analogous in figure to the common Naga, are supposed by Hindu mythology to uphold the world on their dilated necks.

Their sensation of NARADA'S weight as he alighted, is termed by the Scholiast a beautiful exaggeration.

V. 14. Water with rice and grass presented to a guest in an oval vessel is named *Arghya*. It is one of the most auspicious ceremonies at the solemn reception of a guest.

V. 15. Primeval sage, like primeval being in the preceding verse, is a title of VISHNU, applied like all other titles and attributes of that deity, to KRISHNA.

V. 16. KANSA was slain by KRISHNA. The Scholiast cites a passage from AGASTYA where sapphires (if this gem be really meant by the Sanscrit terms *Maha Nila* and *Indra Nila*) are described as produced in mines in the island of *Sinhala* or *Silan*.

The earth is supposed by Hindu poets and mythologists to be terminated by mountains. The Sun rises from behind the eastern range, and sets behind the western.

V. 18. NARADA, like other ascetics, bears a gourd by way of water-pot; making continual pilgrimages he had attached water from every holy river or lake.

V. 19. In conformity with the opinion of the Scholiast, *Jumbu* is here taken for the fruit of the *Eugenia*, which when ripe is of a very dark colour; but *Jumbu* is also the name of a river which flows from the mountain *Sumeru*.

V. 20. The notion of submarine fire may be founded on volcanic phenomena observed in ancient times.

ART. III.—*On the Geographic Distribution of Birds, but more particularly of the European Species; with a critical examination of Mr. Swainson's account.*<sup>1</sup> By WM. JAMESON, ESQ., Bengal Medical Service.

The advantages to be derived from a study of the geographic distribution of the organic and inorganic kingdoms, as presented to our view at the present day, are of the greatest importance, seeing that until this subject has been properly examined, that of a former world must remain imperfect; and probably if more attention had been paid to it, many of the numerous errors connected with the distribution of fossil animals would not have been committed. Lately the foot-marks of birds<sup>2</sup> have been discovered in a formation *said to be as old* as the new red sandstone; and the author, from an examination of these marks, has not only been able to point out the genus, but even characterise the species. The presumption in doing this, is scarcely

<sup>1</sup> Read to the Wernerian Natural History Society of Edinburgh.

<sup>2</sup> Prof. Hitchcock in Sillim. American Journ. of Science.

worthy of attention. Cuvier from an examination of the internal skeleton of birds, declared that it was, in many instances, impossible to tell the genus, far less than the species. Let us therefore receive with caution such observations, even although they have been considered as plausible by several of the leading geologists.<sup>1</sup> We examined the casts of those so called foot-marks, in the collection of the Royal College of Surgeons of London,<sup>2</sup> but were not at all convinced of their ornithological origin, and till we have further evidence than such impressions, we would be inclined to argue the contrary; for we are as much, or rather more, entitled to infer that they are only vegetable impressions.<sup>3</sup> To find the remains of birds in such a formation as the new red sandstone would invalidate one of the grand principles of geology.

In tracing out the geographic distribution of the animal and vegetable kingdoms, various methods have been adopted. Some authors, as Humboldt and Latreille, have attempted to trace them according to parallels of longitude and latitude; others, as Illiger,<sup>4</sup> Fischer,<sup>5</sup> &c., according to the various Continents—which no doubt is the most unobjectionable method; for we find, that when the former is properly examined, it will not stand the test of minute examination, seeing that we have in each of the individual Continents great groups entirely confined, and which have no representatives in any other of the other Continents under similar degrees of longitude and latitude, as we ought to find, if the views of Humboldt, &c. were correct.

Till the laws which regulate the distribution of both the organic and inorganic kingdoms are explained, such a method can never be adopted. We no doubt find secondary causes, such as light, heat, moisture, greater or less distribution of water, configuration of the land, exercising a powerful influence, which is particularly marked out in certain quarters of the globe; and from authors looking to these individual places alone, they have put more stress upon these causes than what we are entitled to do. Thus, for example, in Northern India, where we find the climate in some places to resemble so much the European, we have a large series of quadrupeds, birds, insects, plants, &c. either identical with the European, or undergoing such slight modifications, as to entitle them to be considered as mere local varieties, or at least the representatives of the European species.<sup>6</sup>

1 Buckland's Bridgewater Treatise.

2 For liberty to examine these we were indebted to Mr. Owen.

3 Our reasons for coming to such a conclusion we shall afterwards give.

4 Abh. d. Akad. d. Wiss. Zu. Berlin. 1806, p. 236 et 1812 a. 13, p. 221.

5 Synopsis Animalium et Conspect. Distribut. Geographiæ.

6 Vigors, Zool. Proc. Pt. i. pp. 7, 22, &c. Gould's Cent. of Birds. Wils. Cab. Lib. India, vol. iii. p. 78. Jameson, Wern. Trans. in Ed. New Phil. Jour.

But although these secondary causes seem to have a certain influence in some places, yet that is far from being universal, all appearing to be subject to some great principle hitherto undiscovered, and which will probably remain for ever so.

Nor is it alone in the organic kingdom that we find the distribution liable to vary from unknown causes. In the mineral kingdom we observe phenomena of a similar nature. Thus we find, as has been well remarked, "the geographical distribution of minerals to be very different from mountain rocks; we do not find the same species everywhere, on the contrary, they seem to have many kinds of distribution, in this respect approaching more nearly to what we observe in the physical arrangement of animals and vegetables on the surface of the earth."<sup>7</sup>

It is foreign to our purpose at present to give all the methods which have been proposed by Humboldt, Latreille, Fabricius, Swainson, &c. in order to point out the erroneous grounds upon which they are based, but shall at present confine our attention to that one most recently given, viz. by Swainson; and as he has entered into some detail, in regard to the birds of one of his divisions, allowing us an opportunity of refuting his statements, we shall therefore direct particular attention to it; we are the more induced to do so, as no person has ventured to point out the erroneous views of this author, which seem to have been based upon a few and unsatisfactory data.

By Mr. Swainson the globe has been divided into a series of zoological regions or provinces, denominated, 1st. the European or Caucasian; 2d. Asiatic or Mongolian; 3d. the American; 4th. the Ethiopian or African; and, 5th. the Australian or Malay. In the European or Caucasian province he includes the whole of Europe properly so called, with part of Asia Minor and the shores of the Mediterranean. In Northern Africa, he states, the zoological peculiarities of this region begin to disappear; they are lost to the eastward of the Caucasian mountains, and are blended with those of Asia and America to the north. 2. The Asiatic range comprehends the whole of Asia east of the Ural mountains, which form a natural and well defined barrier between the two Continents. The chief seat of this zoological region is, he states, probably in Central Asia; its western confines blend into the European towards Persia, and disappear in the west of the Caucasian chain; it is united to the African range among the provinces of Asia Minor, and is again connected with Europe, and also with America, by the arctic regions of the three Continents; finally, its

<sup>7</sup> Jameson, Werner Trans. Annals of Phil. vol. vi. p. 301.

most southern limits are marked by the islands of Java and Sumatra, where the zoological characters of the Australian regions begin to be apparent. 3. The American province, he states, is united to Europe and Asia at its northern limits, and comprehends the whole of the New World, but into which it blends at the other extremity is uncertain. 4th. The African province. In it he includes the whole of Africa south of the Great Desert; part, at least, of the countries on the Mediterranean exhibits a decided affinity to the European range; while the absence of large animals in Madagascar, and the presence of genera peculiar to New Holland and the extreme point of Southern Africa, lead us to the fifth, or Australian range. 5. Australian province. Australia, New Guinea, and the neighbouring islands, mark its limits in that direction; Australia Proper is its chief seat, and it spreads over the whole of the numerous islands in the Pacific Ocean; and he moreover remarks, whether this province blends with that of America or Europe, remains for further discovery; but its connexion with Africa and Asia has been already intimated. That the zoology of each of the individual Continents blend with each other at their junction, is a fact that never once has been questioned; but with regard to Madagascar forming the connecting link between Australia and the African Continent, Mr. Swainson can claim no originality in this statement, seeing that it was several years before the publication of Mr. Swainson's elaborate work, pointed out by M. Lesson;<sup>8</sup> and it is a remarkable fact that lately several animals considered truly African have been detected in New Holland,<sup>9</sup> and, on the other hand, several pouched animals, which tribe were supposed to be peculiar to New Holland and America, have been discovered in Madagascar.

The divisions which Mr. Swainson has proposed, appear at first sight very plausible; but when thoroughly inquired into, will not bear the test of examination. Thus to arrange under one and the same division the Continents of North and South America, Mr. Swainson has taken for granted what nobody has admitted, or can admit, viz. that the geographic distribution of birds is subject to the same laws as those which regulate man.<sup>10</sup> Upon this argument the whole of his divisions seems to be founded, which is quite at variance with all that is yet known in regard to the geographic distribution of animals. In fact, there is no ground whatever for such an argument; nor have we any evidence whatever, on the other hand, to maintain that

<sup>8</sup> *Annal. de Science Nat.*

<sup>9</sup> *Proceedings of Zool. Soc. of London.*

<sup>10</sup> The divisions adopted by Mr. Swainson being in accordance with the views of Dr. Pritchard in regard to the distribution of man.

man is liable to be influenced by the same physical laws as those which act upon the lower animals.

If we take into consideration the Continents of North and South America, we shall find them fully as well, if not better, marked out as zoological provinces—at least South America—than any of the others enumerated by Mr. Swainson. Thus among the *Mammalia* in South America, we find, the genera *Priodon*, *Apara Encoubertes*, *Dasyprocta Hydrochaerus*, *Cælogenys*,<sup>10</sup> &c. entirely confined; and in regard to the ornithological kingdom, the genera *Pipra*, *Rupicola*, *Alector*, *Crax*, *Penelope*, *Dicholophus*, *Crotophaga*, *Rhamphastos*, *Rhea Tanagra*, *Trochilus*, &c. are almost entirely unknown in the Northern Continent. No doubt a few extend their migrations as far north as Mexico; and of the family *Trochilidæ*, or Humming-Birds, four are found throughout the Continent of North America; two<sup>11</sup> of these however must be considered as accidental. One, the *Trochilus colubris*, extends as far north as the 57° or 58° on the west coast,<sup>12</sup> it also frequents the warm plains of Saskatchewan, and Mr. Drummond found its nest near the sources of the Elk river. It advances towards the north as the season lengthens, and delays its visits to the Northern States till the month of May, and still as remarked by Nuttall, as if determined that no flower shall blush unseen, or waste its sweetness on the desert air, it launches at once on wings as rapid as the wind, without hesitation, into the flowery wilderness which borders on the arctic circle.<sup>13</sup> Another species, *Trochilus rufus*, first discovered by Captain Cook at Nootka Sound, hence denominated the Nootka Sound Humming-Bird, has a much more extensive range, having been found by Kotzebue as far north as the 61° parallel of latitude on the Pacific coast; and there are specimens in the Edinburgh Royal Museum of the same species from Mexico. Specimens have also been observed by Swainson from the same quarter, being killed near Real del Monte. In the *Trochilus (ornismya) sephanoides*, Less. we see a similar distribution in the Southern Continent, it having been discovered by Captain King at the Straits of Magellan, and in honour of whom it has been named the *Melisuga Kingii* by Vigors,<sup>14</sup> although erroneously, for it does not at all differ from

10 For the different genera of quadrupeds proper to the two continents of America, see Illiger. Loc. Cit. Fischer. Loc. Cit., and Richardson's excellent Report on North American Zool. in Trans of Brit. Asso. vol. v. for those found in North America.

11 Audubon's Amerc. Ornith.

12 Nuttall's Amerc. Ornith. vol. ii. p. 605

13 Nut. vol. i. p. 585

14 Zool. Journ

Lesson's species,<sup>15</sup> who is quite correct in giving this name as a synonym. Lesson's specimen was received from Chili, and in the Edinburgh Museum there are several specimens, one of which was received by Professor Jameson from Mexico. The occurrence of Humming-Birds and Parrots in such high southern latitudes was long ago pointed out by Cook. His observations, however, were called in question, and denied by Buffon, but happily found to be quite correct by King.<sup>16</sup> But are four species, two of which are accidental visiters, to be considered equivalent to nearly one hundred which are confined to the Continent of South America?<sup>17</sup> The same applies to the *Tanagers*; for of the three species found in North America, one alone is proper to it, the other two being also found in South America. The species we allude to, are the *Tanagra rubra*, Lin. and *T. astaca* Gm. Numerous other examples could be given from the families *Psittacidæ*, *Falconidæ*, *Musicapidæ*, *Tyrannidæ*, &c. tending to shew the exclusiveness of the ornithology of South America. Again, when we turn our attention to North America,<sup>18</sup> we find it characterized by certain tribes, which however are not so numerous as those of the other Continent, but quite sufficient in number to mark it out as provincially distinct from South America. But it is not only by the mammalogical and ornithological kingdoms that these Continents are so pre-eminently distinguished from each other. In every department of animated nature we find similar characters, to notice any of which is foreign to our subject at present. But although we have divided the Continents of America into but two provinces, yet we believe the time is not far distant when the mammology, ornithology, entomology, &c. shall be better examined, and more attention paid to the individual members of each class; we shall then instead of two have many zoological provinces. For as in the botanical so in the zoological kingdom, we shall no doubt find series of birds, quadrupeds, &c. having as their fixed places of abode certain regions of the world, beyond which, although a few may migrate, yet upon a careful examination, the greater number will be found to be confined. This statement is well borne out by the collections which frequently reach this country.

Thus what ornithologist who has paid any attention to the subject of the geographic distribution of birds, could not at once distinguish a collection from Southern, from one from Western Africa; or a collec-

15 Man. Ornith. vol. ii. p. 80. Hist. Nat. des Ois. Mouches, p. 69.

16 Zool. Journ.

17 In Mexico a good many species occur.

18 Richardson Loc. Cit. Faun. Bor. Amer. &c.

tion from Northern India, from one from Southern India; or a collection from the Malayan Peninsula from one from any other part of Asia. The same holds true in regard to collections from different parts of the American Continents. Moreover, in the Continent of Australasia we have an ornithology in the neighbourhood of Port Jackson quite different from that we find at Moreton Bay. Thus the *Alectura lathamii*, Gray,<sup>19</sup> found at the latter, is not found in the neighbourhood of Port Jackson, its place being there supplied by the *Menura lyra* Sh. or *M. Novæ Hollandiæ* Lath. It has also been shewn by Professor Jameson, that even in some of the larger islands we have a zoology quite different from that we meet with in the adjoining Continents. Thus he states—In the island of Sumatra, which is only a secondary one in point of magnitude in the Archipelago of Notasia, we meet with the Elephant, Rhinoceros, Hippopotamus, &c.; but the species of animals are often different from those in the neighbouring Continents—. Thus the Rhinoceros of Sumatra is different from that of Asia. Madagascar produces many species of snakes, which are found no where else. The inhabitants of Van Diemen's Land are very different from those of New Holland, and the greater number of mammiferous animals and reptiles are specifically different from those met with in the neighbouring Continents.—That many of the islands of the Indian Archipelago have a zoology peculiar to themselves, has been proved by the researches of Raffles, Horsfield, Sonnerat, Leschenault, Reinwardt, Dussumier, Duvaucel, Diard, Belanger, Kuhl, &c., all of whom have increased our knowledge more or less in regard to them. Nor are the islands farther in the south without their own peculiar *Fauna*. Thus we find in New Zealand not only a great many species, but even many genera which are found to exist no where else. It is here that we meet with that most extraordinary bird the *Apteryx Australis*, first described by Shaw, but whose existence has more than once been called in question,<sup>20</sup> although erroneously, as has been pointed out by Yarrel.<sup>21</sup>

In New Guinea we also meet with a particular *Fauna*. It is here that we find the splendid group of Paradise Birds. We have

19 Proc. Zool. Soc.

20 Lesson Tracte d' Ornith. p. 12. et Man. d' Ornith. vol. ii. p. 210.

21 Tran. Zool. Soc. vol. i. and Zool. Proceed. pt. i. pp. 24, 80. Of this bird there are now several specimens in Europe. In the collection of the Zoological Society of London we saw one specimen, in the Liverpool collection there is an imperfect specimen, and we believe that there is a very fine specimen in the collection of the Earl of Derby, from which Yarrel drew up his description and made his drawing. See Trans. Zool. Soc. vol. i.

therefore in our tables more for convenience, or rather till we get more information on the subject, arranged the birds under the heads of the different Continents, and including all the islands south of Java and Sumatra in the Continent of New Holland, adopting the term of Australasia.

Let us now enter more in detail, and trace out some of Mr. Swainson's so-called zoological provinces. We shall first notice his European or Caucasian Province.

In tracing out the geographic distribution of this province, Mr. Swainson has divided the birds into a series of groups, or orders, thus *Rapaces, Grallatores, Natatores, Gallinaceæ, Scansores, &c.*, which we shall now notice individually. In regard to the first of these groups, he makes the following statement—"The rapacious order, next to the aquatic tribe, is of all others inhabiting the land the most widely spread. This is particularly the case among the nocturnal species. It is remarkable that of thirteen different Owls inhabiting Europe, six only are peculiar; and two of these more particularly inhabit the arctic regions. Of the rest, four occur in America, two in Southern Africa, and one both in Asia and America. The *Falconidæ*, or diurnal birds of prey, in regard to their species, have a more restricted distribution than the nocturnal; yet of these, the Eagles enjoy no inconsiderable range; of four discovered in Europe (I here use his own words<sup>22</sup>) one is more properly arctic, three have been found in several parts of Africa, and one occurs in America—leaving three only to Europe. It is singular, he continues, that those rapacious birds which, from the peculiar structure of their wings, have been supposed to enjoy the greatest powers of flight among their congeners, should nevertheless have a much more limited range. This is proved by the fact, that of eight genuine Falcons inhabiting Europe and Northern Africa, two only have been discovered in America. It has, however, recently been stated that the Peregrine Falcon of Australia is absolutely the same as that of Europe.<sup>23</sup> Upon the whole, the distribution of the forty-four European birds of prey appears to be thus regulated—three are more properly arctic; eleven are found also in America, two in Asia and Africa, and one in Asia and America; leaving *twenty-seven*, or more than one half, as

<sup>22</sup> Geography and Classification of Animals, p. 22. See also Murray's Encyclop. of Geography, vol. i.

<sup>23</sup> In regard to the identity of the Peregrine Falcon of Europe and Australia there can be no dispute. We examined minutely the specimen described by Horsfield and Vigers in the Linnæan Trans. now deposited in the Museum of that Society, but could not discover one trivial character of difference. For permission to examine it, and the collection generally, we were indebted to Prof. Don.



characteristic of European Ornithology." How Mr. Swainson could have come to such conclusions, seems to us very remarkable; not one of the statements which he has made, being at all correct. Thus of the thirty-five species of diurnal rapacious birds found in Europe and comprehended in the genera *Vultur*, *Neophron*, *Gypaetos*, *Falco*, *Aquila*, *Haliæetus*, *Pandion*, *Circæetus*, *Astur* *Accipiter*, *Milvus*, *Nauclerus*, *Elanus*, *Pernis*, *Buteo*, *Butaetes*, and *Circus*, four are common to Europe and Asia; three common to Europe and Africa; three common to Europe and North America; ten common to Europe, Asia, and Africa; four common to Europe, Asia, and North America; one common to Europe, Africa (?) and North America; one common to Europe, Asia, and Australasia; one common to Europe, North and South America; one common to Europe, Asia, Africa, North and South America; and three (?) cosmopolite, or found in all the different Continents of the world; leaving only four species proper to Europe, or in the proportion of 1 to  $8\frac{3}{4}$ , and it is even doubtful at present whether all the four species are confined to Europe. But Mr. Swainson has marked out in a particularly prominent manner the genera of Falcons and Eagles, properly so called, in order to shew that the distribution of birds is not in an equal ratio with their powers of flight—a statement no doubt quite correct; but he has been very unfortunate in his illustrations, for among all the tribes of European birds, the Falcons and Eagles possess a most extensive distribution. Thus of the nine species of Falcons (one or two of which seem to be only occasional European visitants), two alone are proper to Europe; three common to Europe and Asia; one common to Europe and Africa; one common to Europe and North America; one common to Europe, Asia, and North America; and one common to Europe, Asia, Africa, Australasia, North and South America.<sup>24</sup>

That the maxim, as the powers of flight so is the distribution, is not correct, many instances could be given; and in no tribe have we a stronger evidence to the contrary than in the *Rallidæ*, seeing that they exist in the western hemisphere, so far north as Hudson's Bay, and in the eastern, as far south as the Sandwich islands, having thus a range of about  $105^{\circ}$  of latitude, and nearly  $280^{\circ}$  of longitude; and it is well known that the powers of flight in this

<sup>24</sup> Ch. Luc. Bonaparte, in his Catalogue of American and European Birds, gives a new name to the Osprey of America; upon what grounds we know not. Gould in his work on the Birds of New Holland, now publishing, has described the Osprey of that quarter as a new species, to do which he is not at all entitled, there being no characters whatever presented to mark them as specifically distinct. In the Ed. Museum there is one specimen from New Holland, agreeing in every character with specimens killed in Europe. The same remarks apply to the American species.

tribe is not at all well developed, at least to such a degree as to account for its extensive distribution. Nor does this remark apply to this group alone, many other examples, if it were necessary, could be given. In regard to the Eagles, Mr. Swainson's statements are equally inaccurate. Thus of the nine Eagles included in the genera *Aquila*, *Haliæetus*, *Pandion*, and *Circaetus*, two are common to Europe, Asia, and Africa; one common to Europe and North America; one common to Europe and Asia; one common to Europe and Africa; two common to Europe, Africa, and North America; one cosmopolite; leaving only one proper to Europe; for it seems not at all improbable, that the *Aquila imperialis* will be found extending throughout the African Continent.<sup>25</sup> Moreover it may be stated as a general rule, that in whatever families we observe a large series of modifications, there we have a wide distribution. This is strikingly the case in the *Falconidæ*, *Anatidæ*, *Sylviidæ*, *Muscicapidæ*, *Columbidæ*, *Fringillidæ*, *Laridæ*, *Turdidæ*, *Laniadæ*, &c. Nor is this rule confined to the ornithological kingdom; we have a similar arrangement exhibited in the mammalogical, as well as in many of the other kingdoms of the organic world; and when we direct our attention to the inorganic, we can trace out a similar arrangement. Thus in those families in the mineral kingdom in which the physical and external characters are very various, in them we find a most extensive distribution, as is well exemplified by the quartz, calcareous spar, and garnet families, modifications of which occur in every formation, from the oldest up to the newest; in every climate, from the inhospitable regions of Melville island to the tropics, and in all the intermediate spaces; and, on the other hand, from the tropics as far south as 70°, and also at all heights and depths yet attained by man, viz. from 20,000 feet above, to 1600 feet below, the level of the sea.<sup>26</sup>

In regard to the nocturnal birds of prey, comprehended in the genera *Strix*, *Bubo*, *Otus*, *Scops*, *Surnia*, *Ulula*, *Syrnium*, and *Noctua*, we have the following statement to make, which is quite at variance with that given by Swainson. Thus of the fifteen Owls found in Europe, three only are proper to it, one of these doubtful; common to

25 Mr. Gray, in General Hardwicke's Work on Indian Zoology has figured a bird under this name, which however is quite a different species. The specimens noticed in the Asiatic Society's Journal for November, 1838, as varieties of the *Aquila chrysaetos* by Dr. Evans, are quite different birds; in fact they do not belong to the genus *Aquila* at all, being characteristic specimens of the genus *Haliæetus*. The bird is a new species, and the only other specimen we have seen is in the collection of the Zoological Society, London.

26 Jameson's manuscript Lectures on Miner. see also Man. and Syst. of Mineralogy.

Europe and Asia, two ; to Europe, Asia, and Africa, two ; to Europe and North America, five ; to Europe, Asia, North and South America, one ; to Europe, Asia, Africa, and North America, one ; to Europe, Australasia, and North America, one ; thus leaving a proportion of 1 to 5 ; and from these statements it appears evident that the nocturnal birds of prey do not possess such a wide distribution as the diurnal, as stated by Swainson.

But Mr. Swainson in summing up his observations gives, as already stated, 27 species as peculiar to the European or Caucasian province—a number four times larger than we from a most careful and extensive examination have made it ; the number being only seven, and it is even doubtful whether all these are peculiar to this so called zoological region or province.

Having now finished our analysis of the distribution of the Rapacious order, we shall now proceed to another of Mr. Swainson's divisions, viz. the *Gallinaceæ*, whose distribution we shall follow out in a similar manner. "On looking,"<sup>27</sup> says he, "to the whole number of our *Gallinaceæ*, we find twenty seven species, fourteen of which have their metropolis in Europe ; the remainder are thus dispersed—five extend to Western Asia ; five to the confines of the great African Desert ; two are dispersed over Central Asia and Africa ; whilst two occur in North America." In the above statements Mr. Swainson differs very considerably from our examination ; at least it is difficult to understand what he has included in his *Gallinaceæ*, for to make up the number of species we must include the genera *Columba*, *Tetrao*, *Bonasia*, *Lagopus*, *Pterocles*, *Francolinus*, *Perdix*, *Coturnix*, *Hemipodius*, *Otis*, *Cursorius*, and *Glareola*, comprehended under which we have twenty-seven species ; of course leaving out the *Tetrao rupestris*, a doubtful species, and which has only been met with in Europe once or twice. Nor do we include the *Phasianus colchicus*, an imported species. We however comprehend the *Tetrao hybridus*,<sup>28</sup> considered erroneously by some naturalists as a hybrid between the *Tetrao urogallus* and the *Tetrao tetrrix*, it presenting many characters to mark it out as a distinct and well marked species. Of the twenty seven species found in Europe, five are common to Europe and Asia ; three common to Europe and North America ; one or two (?) common to Europe and Africa ; and four common to Europe, Asia and Africa ; thus leaving fourteen proper to Europe, or in the proportion of nearly 1 to 1 ; and of these, one alone is peculiar to the British islands, which is

27 Loco. Citato. p. 23.

28 Yarrel, Proc. Zool. Soc. Gould's Birds of Europe.

rather curious, it being the only bird which is so. Moreover the manner in which Mr. Swainson has traced the distribution of this tribe is much to be questioned, it appearing to us a more plausible than real one, many of his statements no doubt being founded on the peculiarity of the country; at least we are not at all aware of any thing being stated by any author which would authorize him to make such statements, and he makes no mention of being guided by personal examinations, which he no doubt would have done had he travelled in these regions, seeing that there is no individual more ready to inform us of the extent of his travels.

In regard to his next division, we have the following statement—<sup>29</sup> “The Swallow-like birds, *Fissirostres*,” says he, “are well known by capturing their food on the wing, and by their migratory habits; only one, the common or European Kingfisher, being stationary. Hence it is, that most of the European species occur in other regions; the proportion of those which appear confined to Northern Africa is as 1 to 3.” He does not give any more details in regard to the *Fissirostres*, leaving his readers to fill up the rest by their own imagination. In his proportional number of species he is not correct. Thus of the fourteen included in the genera *Hirundo*, *Caprimulgus*, *Merops*, *Coracias*, *Alcedo*, three are probably confined to Europe; and of the others, three are proper to Europe and Asia; to Europe and Africa, three; to Europe, Asia, and Africa, three; to Europe, Africa, and North America, one; and to Europe, Asia, Africa, and North America (?) one; thus leaving a proportion of 1 to  $3\frac{4}{6}$ ; but as many of the species, as stated by Mr. Swainson, of this order are migratory, it renders the proportional number very doubtful; at least it is very liable to vary.

In regard to the *Scansores*, Mr. Swainson states their number to be fifteen, including probably the genera *Picus*, *Apternus*, *Yunx*, *Sitta*, *Certhia*, *Tichodroma*, *Upupa*, and *Cuculus*, eight of which he states are confined to Europe; and as for the distribution of the other seven, as in the *Fissirostres*, he gives us no information. The number of species however is eighteen, and of these eleven are proper to Europe; two common to Europe and North America; three common to Europe and Asia; one common to Europe, Asia, and Africa; and one, the Wryneck (*Yunx torquilla*) common to Europe, Asia, and North America, which was many years ago pointed out.<sup>30</sup> Whether all of the above ten species are proper to Europe, is at present a question, owing

<sup>29</sup> Loc. Cit. p. 24.

<sup>30</sup> Jam. Edin. New Phil. Jour. and James Wilson's Quart. Rev

to the near approximation of several species from Northern India, which still require further examination ; and before the point can be settled, a large series of specimens will require to be examined. In the Indian Creeper (*Certhia vitticauda*, Jam.)<sup>31</sup> and Indian Nuthatch, (*Sitta Himalehensis*)<sup>32</sup> although we have many characters in common with the European, yet still there are many others entitling us to consider them as specifically distinct. The occurrence of the former species in Northern India was a most interesting discovery, pointing out that the genus *Certhia* is more widely distributed than was originally imagined. In several of the Woodpeckers of Northern and Southern India we have also a great similarity with the European species, and in fact so remarkable, as to cause several of the more recent writers to consider them as identical.

In noticing the Crow and Starling families (*Corvidæ* and *Sturnidæ*) Mr. Swainson has made some most extraordinary statements. Thus he states that not only several species, but even peculiar genera are left to characterise this portion of the world. To us this is quite unintelligible. Species we have, we will admit, but as for genera in this group peculiar to Europe, there are none ; and even among the whole birds of this so called province, there is not one genus peculiar to it, if we except one or two among the *Sylviadæ*, whose generic characters however must be called in question ; and even if they should latterly be found to be correct, it would give but little more weight to Mr. Swainson ; for there is no group hitherto more neglected, and of which our knowledge is so imperfect, than the *Sylviadæ*.

For many years, no doubt, the genera *Cinclus*<sup>33</sup> and *Nucifraga* were supposed to be confined to Europe ; but species belonging to the former have been found in North America and Northern India ; and in regard to the latter, we have one species<sup>2</sup> occurring in Northern India, considered erroneously by some authors as identical with the European—it is the *Nucifraga hemispila* of Vigors. We shall after-

31 This bird has received other two names. It has been described by Vigors as the *Certhia Himalayana*, Proc. Zool. Soc. Pt. i. p. 174, and by Swainson as the *Certhia Asiatica*, Anim. Menag. p. 353.

32 Jard. and Selb. Zool. Illust.

33 The distribution of the Dippers stands thus—In Europe we have two species, one proper, the other being also found in Northern India. In America N. and S. (?) one species (*Cinclus Americanus*). The new species described by Bonaparte is the above. Audubon, since the above was written, informed us that he had received two new *Cincli* and a true *Nucifraga* from the Rocky mountains, the latter however had been long before described as a *Corvus*. Brehm has described a third species under the name of *Cinclus melanogaster*, it however appears to me to be a mere variety of the *Cinclus aquaticus*.

wards notice the European genera in regard to their distribution, but in the mean time shall confine our attention to the distribution of the species. In regard to the species included in the genera *Corvus*, *Sturnus*, &c. Mr. Swainson states their number at twenty-one found in Europe, thirteen of which, or more than one half, habitually reside; four occur in Northern and Central Africa; one common to Europe, Asia, and Africa; and three found in America. Nor are the above statements even in regard to the species correct. Thus of the seventeen species, for we cannot make out more, included in the genera *Corvus fregilus*, *Pyrhacorax garrulus*, *Nucifraga*, *Pastor*, and *Sturnus*, six are proper to Europe; four common to Europe and Asia; one common to Europe and Africa; three common to Europe, Asia, and Africa; two common to Europe, Asia, and North America; and one common to Europe, Asia, Australasia (?) and North America. We mark Australasia with an interrogation, for the occurrence of the *Corvus corone* in that Continent seems doubtful. It is upon the authority of M. Lesson,<sup>34</sup> that we make the statement; who, however, we rather think has confounded with it a nearly allied, but quite distinct species. M. Temminck<sup>35</sup> has also in his Catalogue of the Birds of Japan given the *Garrulus glandarius*, and marks it as the Japanese variety, which it undoubtedly ought only to be considered, for the characters which it presents vary so little from those of the European, and are of such a trivial nature. It is not to be confounded with the *Garrulus bispecularis* of Vigors,<sup>36</sup> a well-marked species, also presenting a close affinity to the European, it however is confined to Northern India. In the *Garrulus melanocephalus*, Bon.<sup>37</sup> we have another species presented, bearing a close affinity to the European, but it not only differs in several characters, but also, like the two Indian species, has a quite different distribution, representing in its locality the common *Garrulus glandarius*.<sup>38</sup>

34 Ann. de Sci. Nat.

35 Man. d' Ornith. vol. iii. Introd.

36 Proceed. Zool. Soc. Pt. i. p. 7. Gould's Cent.

37 Gen. Mem. of the Acad. of Turin, vol. xxxvii. p. 298.

38 Strickland on the Birds of Asia Minor. Proc. of Zool. Pt. iv. p. 97.

(To be Continued.)